

A2
--7. (Amended) The method according to claim 1 wherein the sugar acid is administered in pure or partially-purified form.--

--8. (Amended) The method according to claim 1 wherein the biocontrol agent is capable of producing an anti-fungal effective amount of the sugar acid when incubated in media containing an aldose substrate.--

A3
--17. (Amended) The method according to claim 14 wherein the sugar acid is administered in pure or partially-purified form.--

--18. (Amended) The method according to claim 14 wherein the biocontrol agent is capable of producing an anti-fungal effective amount of the sugar acid when incubated in media containing an aldose substrate.--

A4
--27. (Amended) The biocontrol agent according to claim 25 wherein the derivative has enhanced capacity compared to *Pseudomonas* strain AN5rif to colonize the rhizosphere of a plant.--

09890306
105201-002001
--31. (Amended) A phytoprotective composition for the treatment of a fungal infection of a plant comprising the biocontrol agent according to claim 24 in combination with a phytopathologically-acceptable diluent or wetting agent.--

A5
--32. (Amended) The phytoprotective composition according to claim 28 wherein the wetting agent is a non-ionic detergent.--

--33. (Amended) The phytoprotective composition according to claim 28, wherein the fungal infection is an infection by a fungal pathogen selected from the group consisting of *Alternaria* spp.; *A. mellae*; *A. oligosporus*; *B. granulatus*; *B. cinerea*; *Botrytis fabae*; *C. purpurea*; *C. ribicola*; *E. purpurea*; *F. annosus*; *F. oxysporum*; *G. graminis* var. *tritici*; *G. cingulata*; *G. juniperi-virginianae*; *M. fructicola*; *P. alfalfae*; *P. infestans*; *P. sulphureus*;

AS *Puccinia* spp.; *S. apiicola*; *Ustilago* spp.; *V. inaequalis*; and *V. dahliae*; and still more preferably, a fungal pathogen of monocotyledonous plants selected from the group consisting of *C. purpurea*; *G. graminis* var *tritici*; *Puccinia* spp.; and *Ustilago* spp.--

Ab --39. (Amended) A composition for the treatment of a fungal infection in a human or other mammal comprising the biocontrol agent according to claim 24 in combination with one or more pharmaceutically-acceptable carriers or diluents.--

Ab --40. (Amended) The composition according to claim 36 for the treatment of a condition selected from the group consisting of tinea pedis (athlete's foot), tinea cruris, tinea corporis (ringworm), candidiasis, onychia, paronychia, external genital candidiasis, candidal balanitis, pityriasis versicolor and jockey-strap itch.--

Ab --43. (Amended) The method according to claim 41 wherein the aldose is selected from the group consisting of glucose, mannose and galactose.--

Ab --45. (Amended) The method according to claim 41 wherein the culture conditions comprise growth on potato dextrose media or pontiac medium containing aldose substrate.--

Ab --47. (Amended) The method according to claim 41 wherein the culture conditions comprise growth on potato dextrose media or pontiac medium followed by incubation in a concentrated solution of aldose substrate.--

Ab --51. (Amended) The isolated nucleic acid molecule according to claim 48 comprising the nucleotide sequence of SEQ ID NO: 1.--

Ab --52. (Amended) The isolated nucleic acid molecule according to claim 48 comprising the nucleotide sequence of the *Pseudomonas* genome contained in the cosmid clone pMN M53 (AGAL Accession No. NM 00/09622).--

--59. (Amended) The isolated nucleic acid molecule according to claim 53 comprising the nucleotide sequence of the *Pseudomonas* genome contained in the cosmid clone pMN-L2 (AGAL Accession No. NM 00/09621).--

--60. (Amended) A method of producing a sugar acid comprising expressing the isolated nucleic acid molecule according to claim 48 in a cell, tissue or organism and culturing said cell, tissue or organism in the presence of an aldose substrate for a time and under conditions sufficient to produce a sugar acid.--

--62. (Amended) The method according to claim 60 further comprising extracting or purifying the sugar acid produced.--

--63. (Amended) The method according to claim 60 wherein the cell is a bacterial cell.--

--65. (Amended) The method according to claim 60 wherein the cell, tissue or organ is a plant cell, tissue, or organ.--

--66. (Amended) The method according to claim 60 further comprising expressing a nucleic acid molecule for a time and under conditions sufficient to produce PQQ in the cell, tissue or organ; wherein the nucleic acid molecule comprises a nucleotide sequence encoding one or more enzymes involved in the biosynthesis of PQQ, wherein said nucleotide sequence is selected from the group consisting of:

- (i) a nucleotide sequence having at least about 50 contiguous nucleotides of any one of SEQ ID NOs: 2 to 6 or a complementary sequence thereto;
- (ii) a nucleotide sequence having at least about 50 contiguous nucleotides of the *Pseudomonas* gene sequence contained in the cosmid clone pMN-L2 (AGAL Accession No. NM 00/09621); and
- (iii) a nucleotide sequence that is degenerate to any one of SEQ ID NOs: 2 to 6 or the *Pseudomonas* gene sequence contained in the cosmid clone pMN-L2 (AGAL Accession

No. NM 00/09621).--

--67. (Amended) A method of enhancing the tolerance of a plant to infection by a fungal pathogen comprising expressing therein the isolated nucleic acid molecule according to claim 48, and optionally a second isolated nucleic acid molecule encoding one or more PQQ-biosynthesis enzymes, for a time and under conditions sufficient for a sugar acid to be produced by said plant, or by a cell, tissue or organ of said plant.--

013
09890306-10504
T05201-90E06860
--68. (Amended) The method according to claim 67 wherein the second isolated nucleic acid molecule comprises a nucleotide sequence encoding one or more enzymes involved in the biosynthesis of PQQ, wherein said nucleotide sequence is selected from the group consisting of:

- (i) a nucleotide sequence having at least about 50 contiguous nucleotides of any one of SEQ ID NOs: 2 to 6 or a complementary sequence thereto;
- (ii) a nucleotide sequence having at least about 50 contiguous nucleotides of the *Pseudomonas* gene sequence contained in the cosmid clone pMN-L2 (AGAL Accession No. NM 00/09621); and
- (iii) a nucleotide sequence that is degenerate to any one of SEQ ID NOs: 2 to 6 or the *Pseudomonas* gene sequence contained in the cosmid clone pMN-L2 (AGAL Accession No. NM 00/09621).--

--69. (Amended) A transformed plant comprising the isolated nucleic acid molecule claim 48.--

--70. (Amended) A progeny plant, cell, tissue or organ of the plant according to claim 69, wherein said progeny, cell, tissue or organ comprises the isolated nucleic acid molecule; wherein the nucleic acid molecule comprises a nucleotide sequence which encodes one or more enzymes involved in the biosynthesis of a sugar acid, wherein said nucleotide sequence is selected from the group consisting of:

- 13
- (i) a nucleotide sequence which is at least about 50% identical to at least about 30 contiguous nucleotides of SEQ ID NO: 1 or a complementary sequence thereto;
 - (ii) a nucleotide sequence which is at least about 50% identical to at least about 30 contiguous nucleotides of the *Pseudomonas* gene sequence contained in the cosmid clone pMN M53 (AGAL Accession No. NM 00/09622);
 - (iii) a nucleotide sequence which is capable of hybridising under at least low stringency conditions to at least about 30 contiguous nucleotides of SEQ ID NO: 1 or a complementary sequence thereto;
 - (vi) a nucleotide sequence which is capable of hybridising under at least low stringency conditions to at least about 30 contiguous nucleotides of the *Pseudomonas* gene sequence contained in the cosmid clone pMN M53 (AGAL Accession No. NM 00/09622); and
 - (vii) a nucleotide sequence which is degenerate to SEQ ID NO: 1 or the *Pseudomonas* gene sequence contained in the cosmid clone pMN M53 (AGAL Accession No. NM 00/09622).--

09890306-1025074
Add claims 71 and 72 as follows:

--71. (New) A transformed plant comprising the isolated nucleic acid molecule claim

53.--

74

--72. (New) A progeny plant, cell, tissue or organ of the plant according to claim 69, wherein said progeny, cell, tissue or organ comprises the isolated nucleic acid molecule; wherein the nucleic acid molecule comprises a nucleotide sequence encoding one or more enzymes involved in the biosynthesis of PQQ, wherein said nucleotide sequence is selected from the group consisting of:

- (i) a nucleotide sequence having at least about 50 contiguous nucleotides of any one of SEQ ID NOs: 2 to 6 or a complementary sequence thereto;
- (ii) a nucleotide sequence having at least about 50 contiguous nucleotides of the *Pseudomonas* gene sequence contained in the cosmid clone pMN-L2 (AGAL Accession

Applicant : Murali Nayudu e
Serial No. :
Filed :
Page : 7

Attorney : Docket No.: 13377-002001

- alt
- (iii) No. NM 00/09621); and
a nucleotide sequence that is degenerate to any one of SEQ ID NOs: 2 to 6 or the
Pseudomonas gene sequence contained in the cosmid clone pMN-L2 (AGAL Accession
No. NM 00/09621).--
-

10520T" 90E06B60